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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/971,940	10/04/2001	Larry J. Miller	H0002349	4088
128	7590	06/23/2005	EXAMINER	
HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			VO, LILIAN	
			ART UNIT	PAPER NUMBER
			2195	

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/971,940

Applicant(s)

MILLER, LARRY J.

Examiner

Lilian Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 35 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 3 and 18 - 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Ford et al. ("CPU Inheritance Scheduling", hereinafter Ford), cited by applicant.

4. Regarding claim 1, Ford discloses a method for transferring CPU budget and CPU control between client thread and a server thread, comprising:

assigning a CPU budget to a client thread, the CPU budget occurring within a first period (page 1, right column, 2 – 3rd paragraph: threads can temporarily donating their CPU time to selected threads while waiting on events on interest. Page 4, left column, 3rd paragraph: A thread may have a real CPU assigned to it at any given instant; a running thread may be preempted and its CPU reassigned to another thread);

executing the client thread at a scheduled time within the first period (page 1, right column, 2 – 3rd paragraph, page 4, left column, 3rd paragraph);

transferring, within said first period, CPU control and any unused CPU budget to the server thread when the first thread stops executing (page 1, right column, 2 – 3rd paragraph:

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threads can temporarily donating their CPU time to selected threads while waiting on events on interest. Page 5, left column, 3rd paragraph: client thread donates its CPU time to the server thread);

executing the second thread within said first period (page 1, right column, 2 – 3rd paragraph, page 4, left column, 3rd paragraph, page 5, left column, 3rd paragraph); and

transferring, within said first period, CPU control and any unused CPU budget to said client thread when the server thread stops executing (page 1, right column, 2nd paragraph: if an event causes the scheduler thread to wake up, the running thread is preempted and the CPU is given back to the scheduler immediately. Page 5, left column, and 3rd paragraph: client thread donates its CPU time to the server thread for the duration of the request. Page 6, left column, 1st paragraph, page 8, right column, 3rd paragraph – page 9, left column, 1st paragraph).

5. Regarding **claim 2**, Ford discloses a method according to claim 1 further comprising alternately transferring CPU control and unused CPU budget between the client thread and the server thread within the period (page 1, right column, 2 – 3rd paragraph, page 4, left column, 3rd paragraph, page 5, left column, 3rd paragraph, page 6, left column, 1st paragraph, page 8, right column, 3rd paragraph – page 9, left column, 1st paragraph).

6. Regarding **claim 3**, Ford discloses a method according to claim 1 further comprising terminating the execution of the client thread and the server thread when the CPU budget has expired (page 1, right column, 3rd paragraph: quantum expiration).

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7. Regarding **claim 18**, Ford discloses a method according to claim 1 wherein the CPU budget assigned to the client thread is sufficient to complete the task of the client/server pair (page 9, left column, last paragraph - right column, 1st paragraph: threads go back to sleep again after finishes all of its work before its real-time scheduling quantum is expired).

8. Regarding **claim 19**, Ford discloses a method according to claim 1 further comprising assigning a CPU budget to the server thread (page 5, left column, 3rd paragraph: client thread donates its CPU time to the server thread).

9. **Claims 20 - 21** are rejected on the same ground as stated in claims 1 - 2 above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4 – 8, 10, 13 – 16, 22 – 26, 28 and 31 – 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al. (“CPU Inheritance Scheduling”, hereinafter Ford), as applied to claims 1 and 20 above, cited by applicant, in view of applicant’s admitted prior art (hereinafter AAPA).

12. Regarding **claim 4**, Ford did not clearly disclose the step of transferring service requests from the client to the server. Instead, Ford discloses that when a thread makes an RPC to a server thread, the client thread may donate its CPU time to the server for the duration of the request (page 5, left column, 3rd paragraph). This obviates that client thread is executing to transfer/forward the request to the server for processing. Furthermore, the step of executing with transferring the service requests from the client to the server is considered obvious and well known for the client-server system, which also admitted by applicant's admitted prior art (specification page 2, line 21 – page 3, line 2). Therefore, it would have been obvious for one of ordinary skill in the art, at the time of the invention was made, to incorporate the feature of transferring the request to the server as disclosed in applicant's admitted prior with Ford's system, in which the client in client-server environment transfers the service requests to the server to obtain a desirable result.

13. Regarding **claim 5**, as modified Ford discloses the step of transferring results of the service requests from the server to the client (AAPA, specification page 2, line 21 – page 3, line 2).

14. Regarding **claim 6**, as modified Ford discloses the client thread places service request in a client-to-server queue when said client thread is executing and wherein said server thread retrieves and processes the service request when said server thread is executing (AAPA, specification page 2, line 25 – page 3, line 2).

15. Regarding **claim 7**, as modified Ford did not clearly disclose the server thread places the results of the service request in server-to-client queue when the server thread is executing and wherein the client thread retrieves the results when said client thread is executing. Instead, AAPA discloses of an input queue to place input/request to be serviced. Moreover, the server to client queue is considered well known in the client-server environment, in which an output queue is used to place the result/output after finishing process to be sent back to/be retrieved by the client. Therefore, it would be obvious for one of an ordinary skill in the art, at the time the invention was made to implement modified Ford with an output queue to place the result so that it can be retrieved by the client thread to obtain the desirable result.

16. Regarding **claim 8**, as modified Ford discloses the step of transferring occurs when the client thread has completed send service request to the client-to-server queue (page 1, right column, 2 – 3rd paragraph: threads can temporarily donating their CPU time to selected threads while waiting on events on interest. Page 5, left column, 3rd paragraph: client thread donates its CPU time to the server thread).

17. Regarding **claim 10**, as modified Ford discloses the step of transferring occurs when a service request must be processed immediately (Ford, page 4, left column, 3rd – 4th paragraph: a running thread may be preempted and its CPU reassigned to another thread at any time).

18. Regarding **claim 13**, as modified Ford discloses the step of transferring occurs when the server thread is responding to a priority service request from the said client thread (Ford, page 1,

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right column, 3rd paragraph: if a different event causes the scheduler thread to wake up, the running thread is preempted and the CPU is given back to the scheduler immediately).

19. Regarding **claim 14**, as modified Ford discloses the first step of transferring occurs upon the occurrence of a synchronization object (Ford, page 1, right column, 2nd paragraph: threads can temporarily donate their CPU time to selected threads while waiting on events of interest).

20. Regarding **claim 15**, as modified Ford discloses the second step of transferring occurs upon the occurrence of a synchronization object (Ford, page 1, right column, 3rd paragraph: if a different event causes the scheduler thread to wake up, the running thread is preempted and the CPU is given back to the scheduler immediately).

21. Regarding **claim 16**, as modified Ford discloses the synchronization object is an event (Ford, page 1, right column, 3rd paragraph: if a different event causes the scheduler thread to wake up, the running thread is preempted and the CPU is given back to the scheduler immediately).

22. **Claims 22 – 26, 28 and 31 – 34** are rejected on the same ground as stated in claims 4 – 8, 10 and 13 – 16 above.

23. Claims 9, 11, 12, 27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al. (“CPU Inheritance Scheduling”, hereinafter Ford), as applied to claims 1 and 20

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above, cited by applicant, in view of applicant's admitted prior art (hereinafter AAPA) and further in view of Ryan et al. (US Pat Application Publication 2002/0184381, hereinafter Ryan).

24. Regarding **claim 9**, as modified Ford did not clearly disclose the step of transferring occurs when the client-to-server queue is full. Nevertheless, Ryan discloses a network processor for switching data between an input and output that has an input queue and an output in which if the input queue has an occupancy value exceeding the threshold occupancy value, the data is redirected to another input queue, in other words, an appropriate action is taken (abstract and page 57, claim 12). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate the feature as taught in Ryan to modified Ford so that the appropriate action can be taken when the input queue is full.

25. Regarding **claim 11**, as modified Ford did not clearly disclose the step of transferring occurs when the server-to-client queue is full. Nevertheless, Ryan discloses a network processor for switching data between an input and output that has an input queue and an output in which the processing element will not overwrite words in an output queue that still need to be read by the queue manager (page 7, paragraph 89). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate the feature as taught in Ryan to modified Ford so that the appropriate action can be taken when the output queue is full so that data in the output are not being overwrite.

26. Regarding **claim 12**, as modified Ford did not clearly disclose the step of transferring occurs when the server thread empties the server-to-client queue. Nevertheless, Ryan discloses a

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network processor for switching data between an input and output that has an input queue and an output in which the processing element will not overwrite words in an output queue that still need to be read by the queue manager (page 7, paragraph 89). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate the feature as taught in Ryan to modified Ford so that the appropriate action can be taken to empty the output queue so that additional data can be written to the output queue.

27. **Claims 27, 29 and 30** are rejected on the same ground as stated in claims 9, 11 and 12 above.

28. **Claims 17 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al. ("CPU Inheritance Scheduling", hereinafter Ford), as applied to claims 1 and 20 above, cited by applicant, in view of applicant's admitted prior art (hereinafter AAPA) and further in view of Chan (US 6,466,898).

29. Regarding **claim 17**, as modified Ford did not clearly disclose that synchronization object is a semaphore. Nevertheless, Chan discloses the synchronization object is a semaphore (col. 18, line 64 – col. 19, line 5, line 37 – 46). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate this feature from Chan to modified Ford so that threads state can be updated accordingly.

30. **Claim 35** is rejected on the same ground as stated in claim 17 above.

Response to Arguments

31. Applicant's arguments filed 4/12/05 have been fully considered but they are not persuasive for the reason set forth below.

32. Regarding applicant's remarks that Ford does not disclose or suggest a budget transfer mechanism where transfer such as CPU control and unused CPU budget occur within a CPU budget period (page 8, 2nd paragraph), the examiner disagrees. As it is well known in the art that threads are scheduled to run on CPU according to its allocated CPU time slice and/or time period, meaning CPU budget within a given time period/slice. Thus, Ford discloses that threads can temporarily donating their CPU time to selected threads while waiting on events on interest (page 1, right column, 2 – 3rd paragraph) and a thread may have a real CPU assigned to it at any given instant; a running thread may be preempted and its CPU reassigned to another thread (page 4, left column, 3rd paragraph). In other words, a thread CPU time is a thread CPU control and CPU budget within a given period. Therefore, Ford clearly discloses and/or suggest such teachings in page 1, right column, 2 – 3rd paragraph and page 4, left column, 3rd paragraph.

With respect to applicant's remarks that Ford disclosure of transferring CPU control does not equate to transferring unused CPU budget within the first period (page 8, 3rd paragraph), the examiner again disagrees. During each thread allocated time slice or CPU time, the thread has the control over the CPU within that period/time slice. Ford discloses that if an event causes the scheduler thread to wake up, the running thread is preempted and the CPU is given back to the scheduler immediately (page 1, right column, 2nd paragraph). In other words, when a thread is preempted, the remaining CPU time (unused budget) is transferred back. Therefore, Ford

discloses of transferring of CPU control when the thread is preempted is equivalent to the transferring of unused CPU budget within a given period.

Similarly, the same responses above are applied to applicant's arguments in page 9, 4th paragraph.

33. In response to applicant's argument (page 8, 3rd paragraph last sentence) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., unused CPU budget is transferred back up the hierarchical framework) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Biliris et al. (US 6,041,354) disclosed a method that provided supports continuous media for conventional networked workstations and PC's with slack filling.

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist at 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2127

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June 20, 2005


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